



Ogden High Auditorium & Gym



Seismic Risk Factors:

High Seismic Hazard Zone

S_{DS} : **0.97g**

Vulnerable Construction:

Unreinforced Masonry &
Terracotta

Historically Poor Seismic
Performance

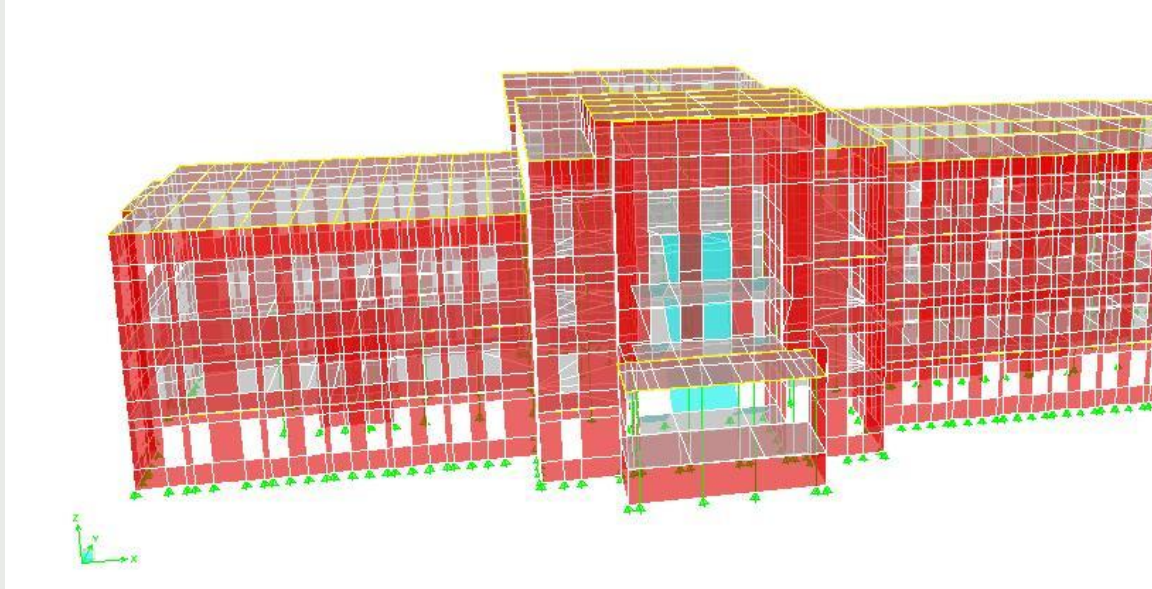


Renovation Plan:

- New foundations
- Add new shear walls
- Reinforce existing brick walls
- New Roof Diaphragm

Renovation Plan:

Structural Modeling



Renovation Plan:

- New foundations



Images courtesy of Hughes General Contractors

Renovation Plan:



- New foundations

Image courtesy of Hughes General Contractors

Renovation Plan:



- Add new shear walls

Renovation Plan:



- Add new shear walls

Images courtesy of Hughes General Contractors

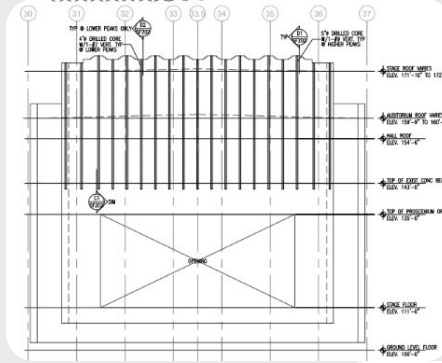
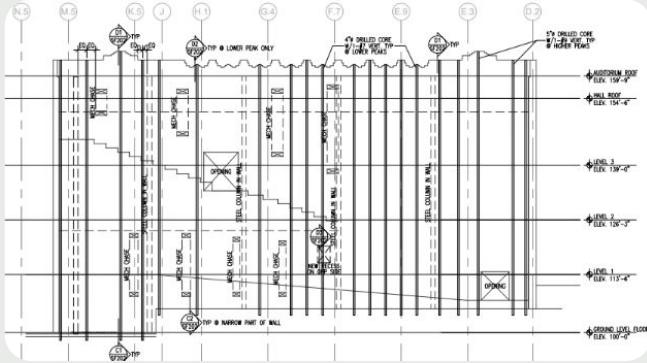
Renovation Plan:

- Reinforce existing brick walls



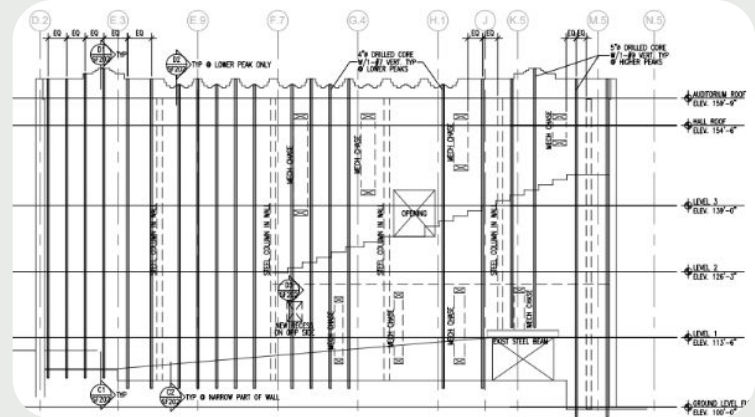
Images courtesy of Hughes General Contractors

Renovation Plan:



- Reinforce existing brick walls

- 60 holes
- Longest core over 60 feet



Renovation Plan:



- New Roof Diaphragm

Courtesy of Hughes General Contractors

E

D



E

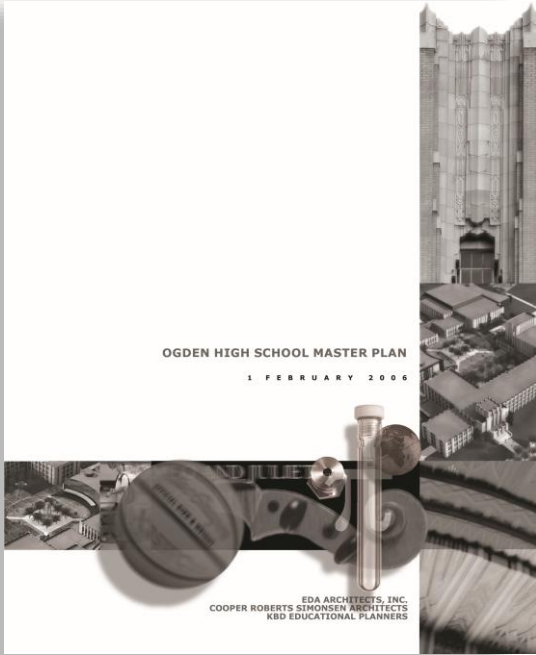
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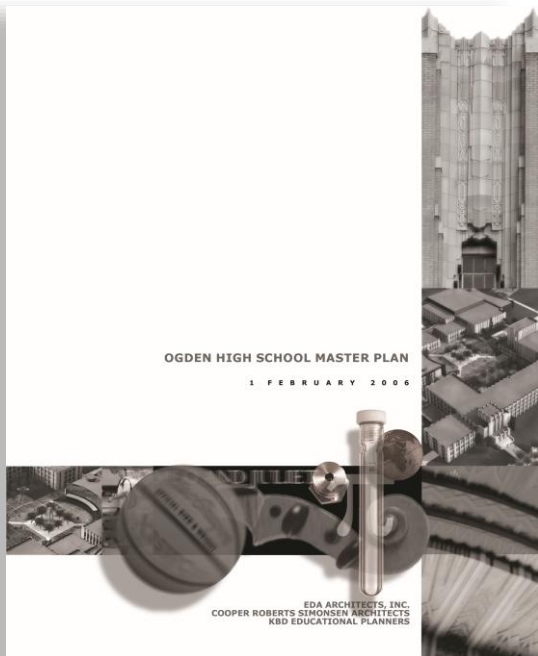
Project Timeline

1936/37	Ogden High Completed
2002	Ogden School District Facility-wide Assessment
2004	\$156 million bond defeated
2005/2006	Ogden School District prepared Ogden High Master Plan with EDA CRSA KBD
2007	Ogden City passed a \$95.3 bond for the renovation of Ogden High and Ben Lomond High
2007	Ogden High began design and construction work
2009	Ogden School Foundation began \$9 million campaign
2012/13	Ogden High School opened to the public



Master Plan Study Areas

- Facility Program/Education Specifications
- Master Plan
- Preservation Assessment
- Life Safety Assessment
- Cost Estimating
- Preliminary Phasing Plan
- Bond Assistance



Master Plan Recommendations

Adapt historic structure into a 21st century high school (Total completed building area: 245,000 square feet)

- Restored historic architecture with specific attention to the auditorium/stage house
- Student commons and cafeteria
- Modern athletic center
- Black box theatre
- Modern science laboratory space
- Renovated historic library
- High-performing HVAC and improved air quality
- Enhanced technology
- Seismic improvements
- State-of-art athletic facilities
- Learning-communities configuration
- Ongoing use of Ogden High during construction

E

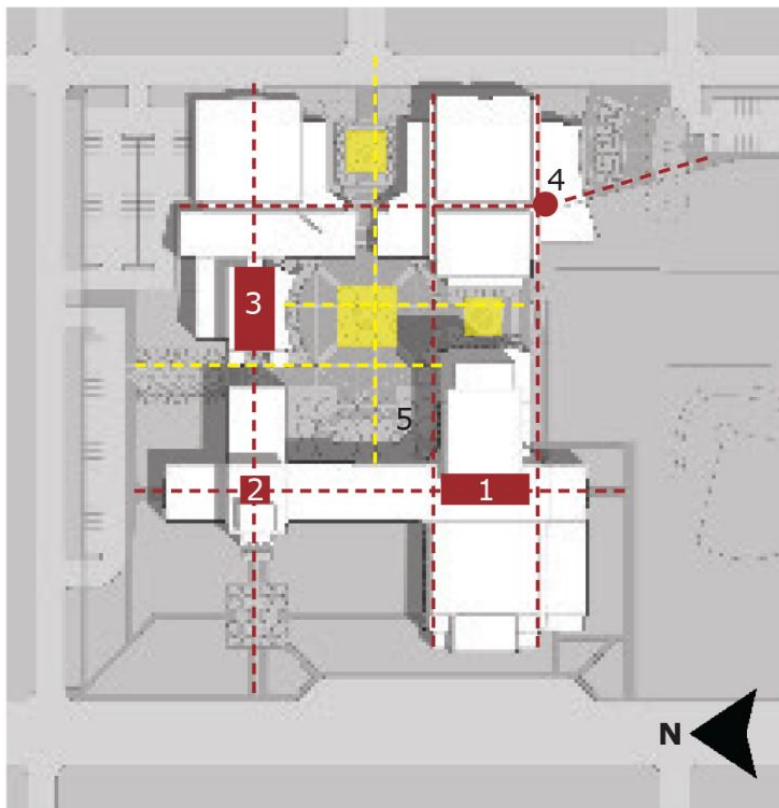


Diagram 5.5: Access / Activity Zones

- ■ Interior Activity Zone
- Interior Circulation
- Exterior Activity Zone
- Exterior Circulation

1. Lobby
2. Rotunda
3. Student and Faculty Dining, Student Commons
4. Public Entrance
5. The Quad

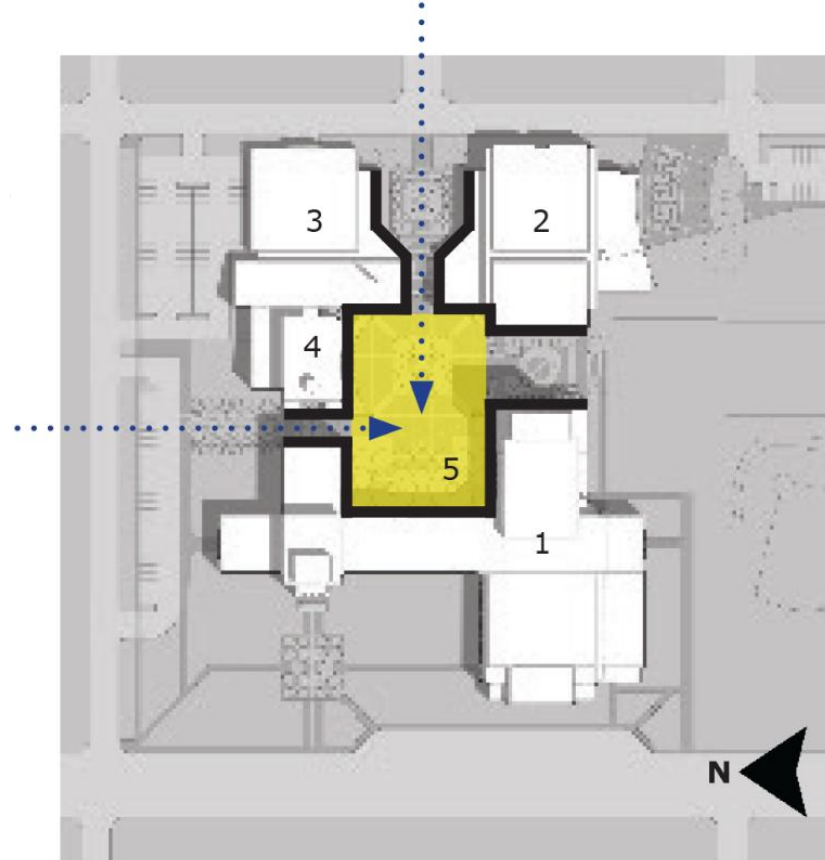


Diagram 5.4: Creating a Unified Sense of Place

- Edge
- ... ▶ View Corridor
- Place

1. Main Administration, Arts and Humanities, Health Science and Human Resources, Business and Computer
2. New Competition Gym and Auxiliary Gym, Fitness Center, Dance Studio, Wrestling, Athletic Support Facilities, Health Classrooms
3. Applied Science and Technology, NROTC
4. Student and Faculty Dining, Student Commons, Kitchen, Applied Science Satellite Admin.

D

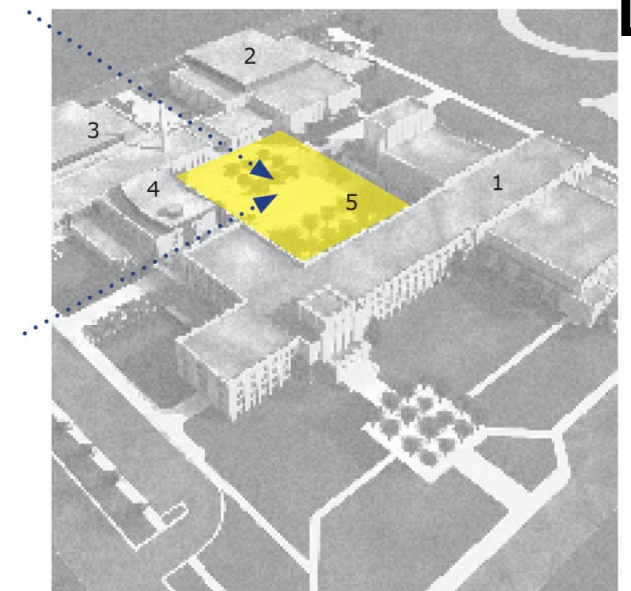
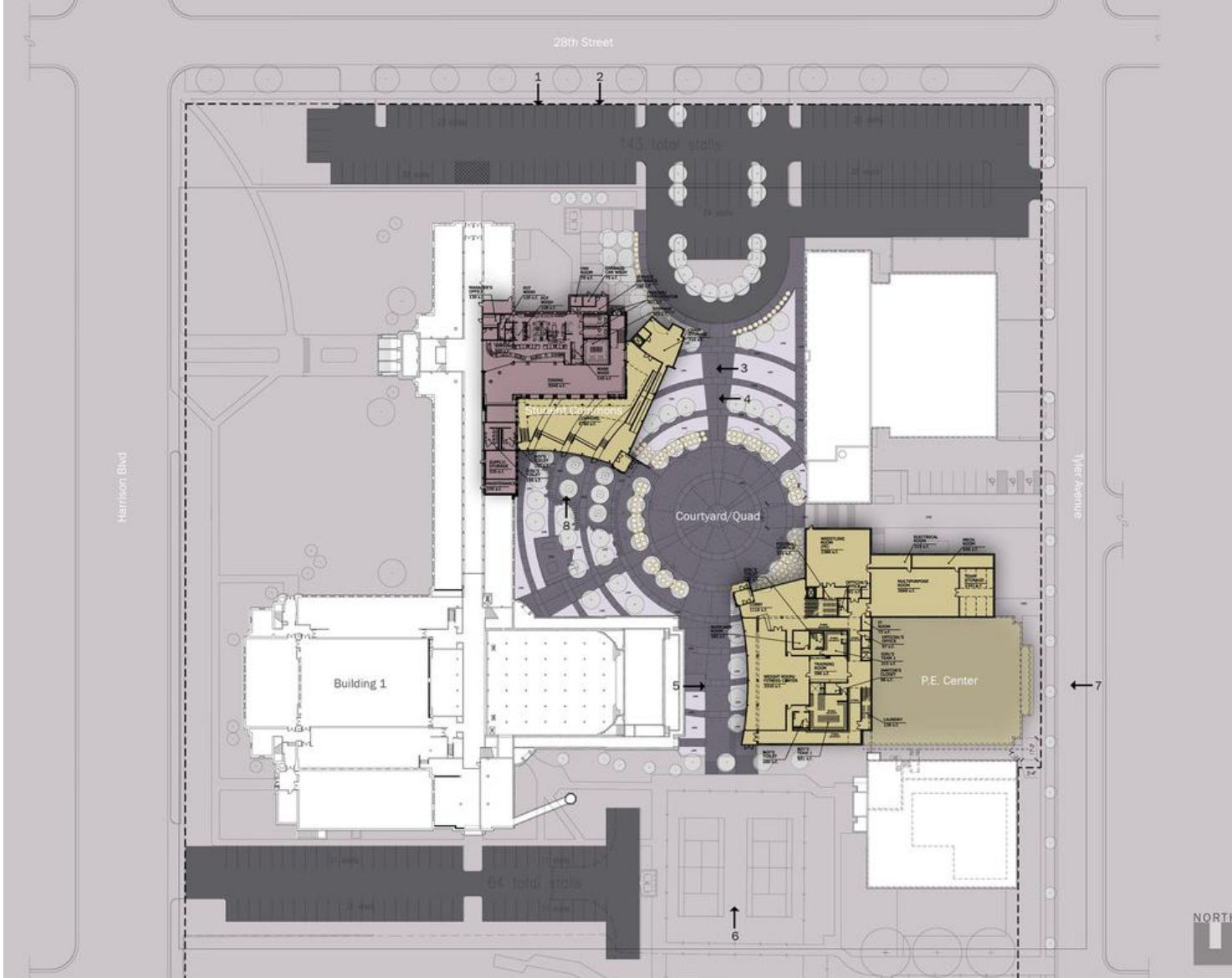


Diagram 5.4A: Creating a Unified Sense of Place

Master Plan Diagrams

A

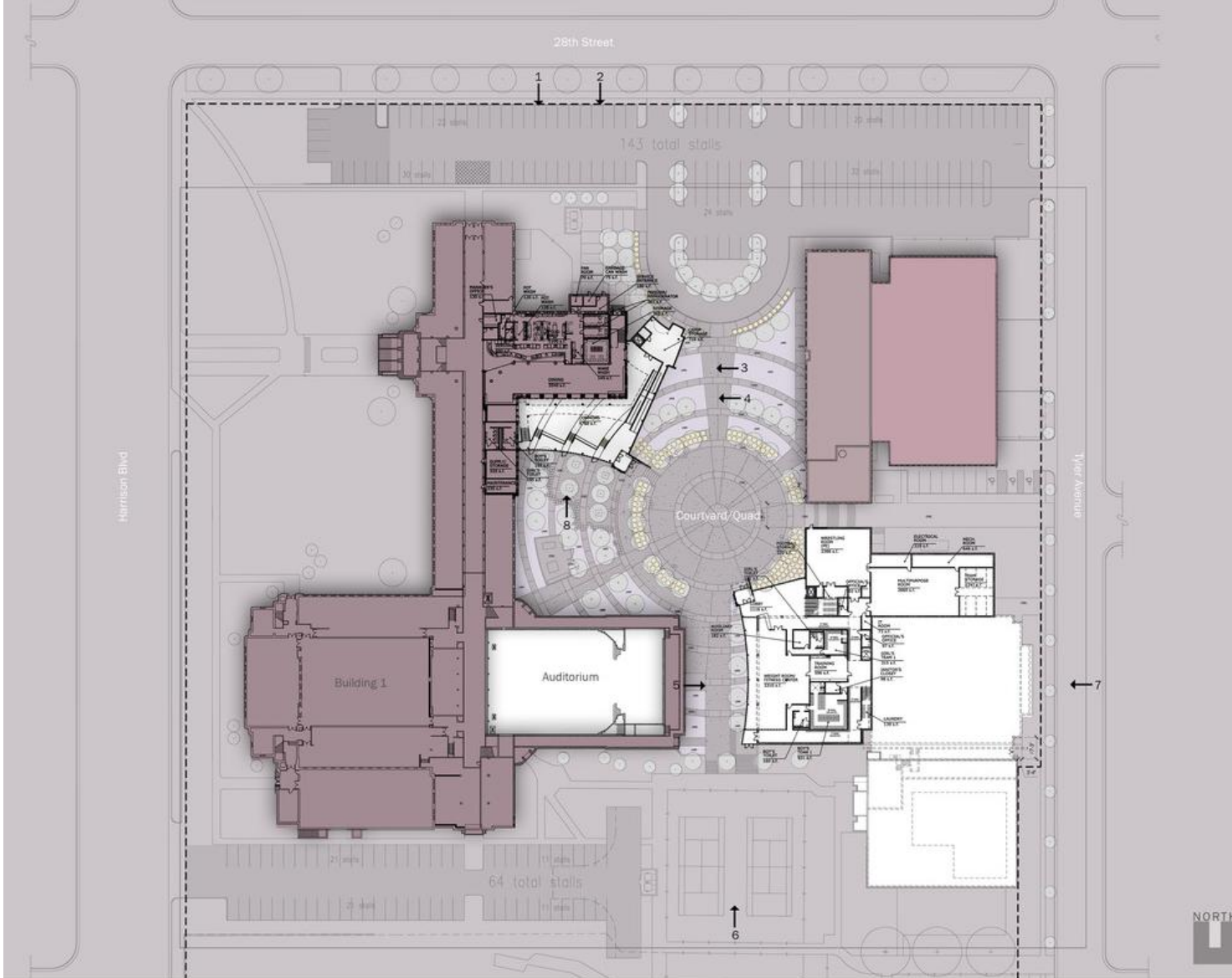


PHASE 1
 New physical education and athletic center
 New student commons and dining hall/kitchen remodel
 New landscaped quad/courtyard
 Parking enhancements

**OGDEN HIGH SCHOOL
 RESTORATION AND
 EXPANSION**



Phase 1

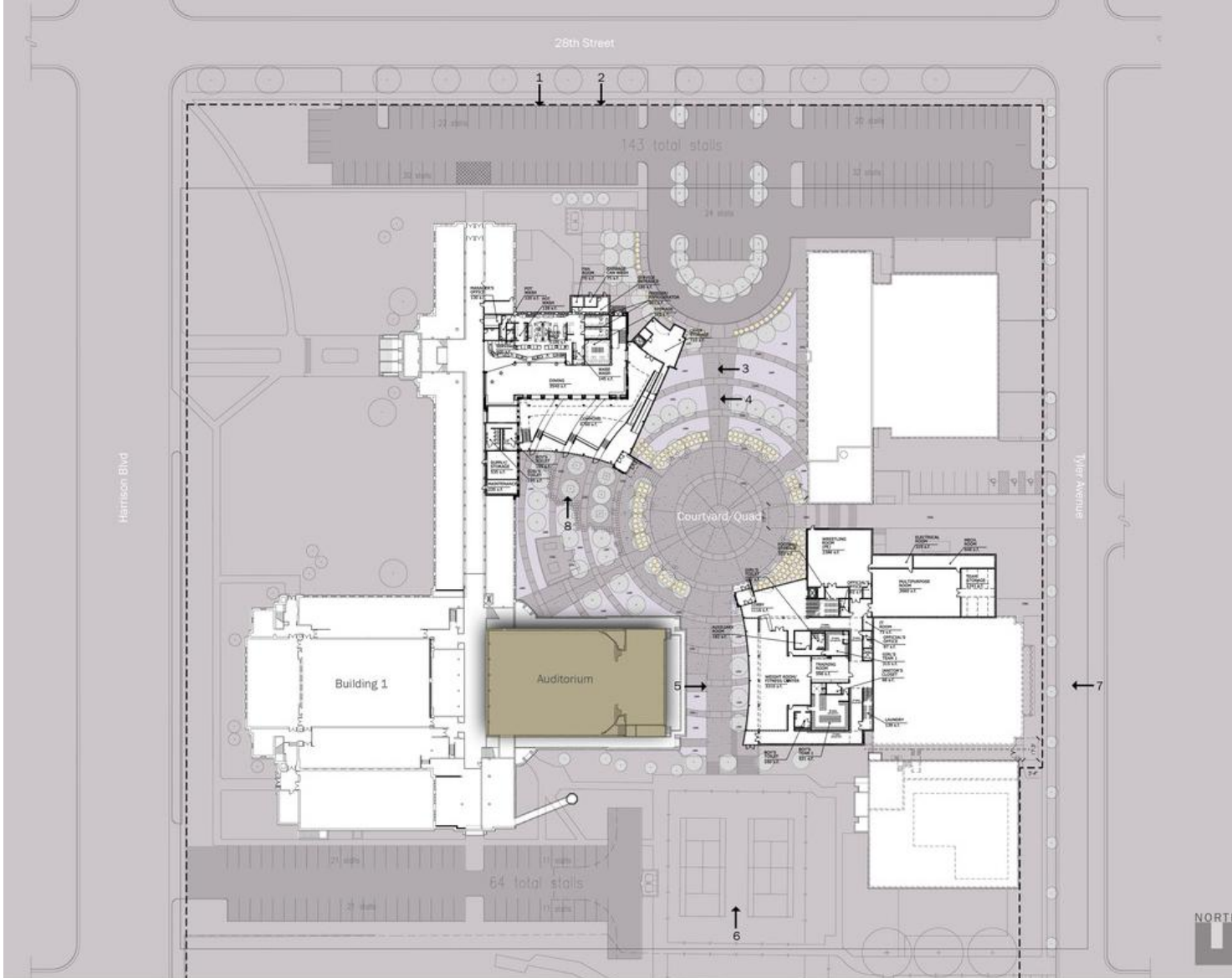


Phase 3
 restoration and renovation of Buildings 1 and 2
 new science center and performing arts center in Building 1
 new applied technology laboratory
 landscape enhancements

OGDEN HIGH SCHOOL
 RESTORATION AND
 EXPANSION



Phase 2



PHASE 2
 Auditorium restoration
 Historic window and door repair and replacement

**OGDEN HIGH SCHOOL
 RESTORATION AND
 EXPANSION**



Phase 3



Sustainability Strategies

- Large-scale **chilled beam system** (first use)
- **Radiant floor** heating & cooling in Commons
- **Operable windows** for natural ventilation
- **Smart controls** for lighting
- **Next generation glazing** (spectrally selective)
- **Recycled, locally fabricated steel** structure
- **Locally produced masonry units**
- **Sustainable interior materials**
 - Rapidly renewable & high recycled content
- **Landscape improvements**
 - Replaced asphalt with planting & permeable/high-albedo surfaces
- **Flexible infrastructure**
 - Accessible ceilings & wall chases



Funding of \$64 million project costs*

Ogden School District 2007 \$95.3 million bond

QZAP grants**

Other grants and funding sources

Ogden School Foundation 2009-2011 Capital Campaign

\$9 million raised with over 1,200 individual gifts including named two major gifts of over \$1 million each

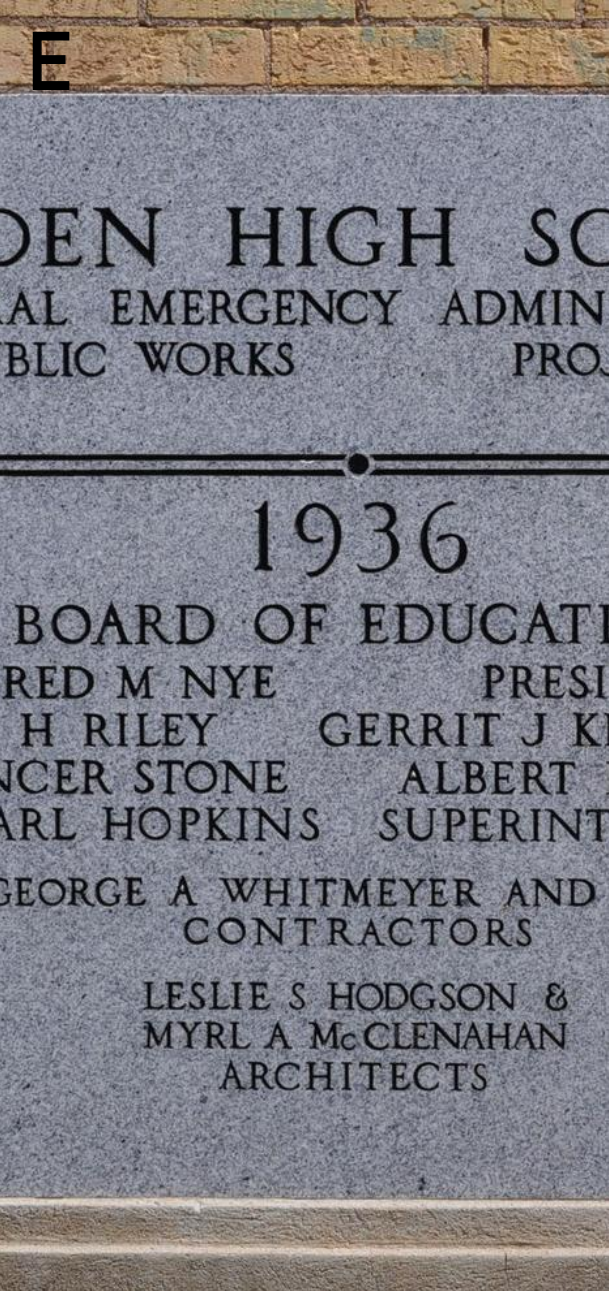
*Cost: 58 million (construction); 64 million (total)

**Qualified Zone Academy Bond (QZAB) is a U.S. government-issued bond that allows public schools to borrow at low or zero interest, with investors receiving federal tax credits instead of cash interest.

Project Team

- EDA | CRSA: Master Planning, Architecture and Preservation
- Reaveley Engineers: Structural Engineering
- Colvin Engineering: Mechanical and Plumbing
- Spectrum Engineering: Electrical, Lighting, Acoustical Design
- MGB+A: Landscape Architecture
- CCC: Cost Estimating (Master Plan)
- Hughes Construction





Awards

2013	National Trust for Historic Preservation National Preservation Honor Award	
2013	Utah Heritage Foundation Honor Award	
2013	Engineering News Record, Mountain States Best Renovation/Restoration Project	
2013	Associated Builders and Contractors Utah Chapter of the Year	Excellence in Construction: Project
2014	American Council of Engineering Companies Grand Conceptor Award	
2014	Build America Natonal Award: Associated General Contractors	



Examples of the Physical Defects Demanding Attention

Sanitary/Safety Issues

Plumbing and roof leaks everywhere, flooding throughout basement

Stinky restrooms throughout, cold and drafty windows

Dim and dingy lighting and electrical issues everywhere

Minimal roof insulation

Damage to Art Deco Ornamentation

Re-bonding plaster moldings where keys had failed

Restoring 68 paint colors plus gold and silver leaf restoration

Acoustic plaster combined with cementitious to replace asbestos plaster

Chairs

Lost 3 rows at back of balcony to accommodate structural shear walls

Increased row spacing from 30" to 35"

Increased width of chairs by 2-3"

Reduced overall seating capacity by several hundred

Structural and Seismic Upgrades

Shear wall and micro pile reinforcements using 20,000 anchors into existing structure to add reinforcing and shotcrete. Center-core unreinforced masonry

Replace original roof not designed for snow load



04/20/2010











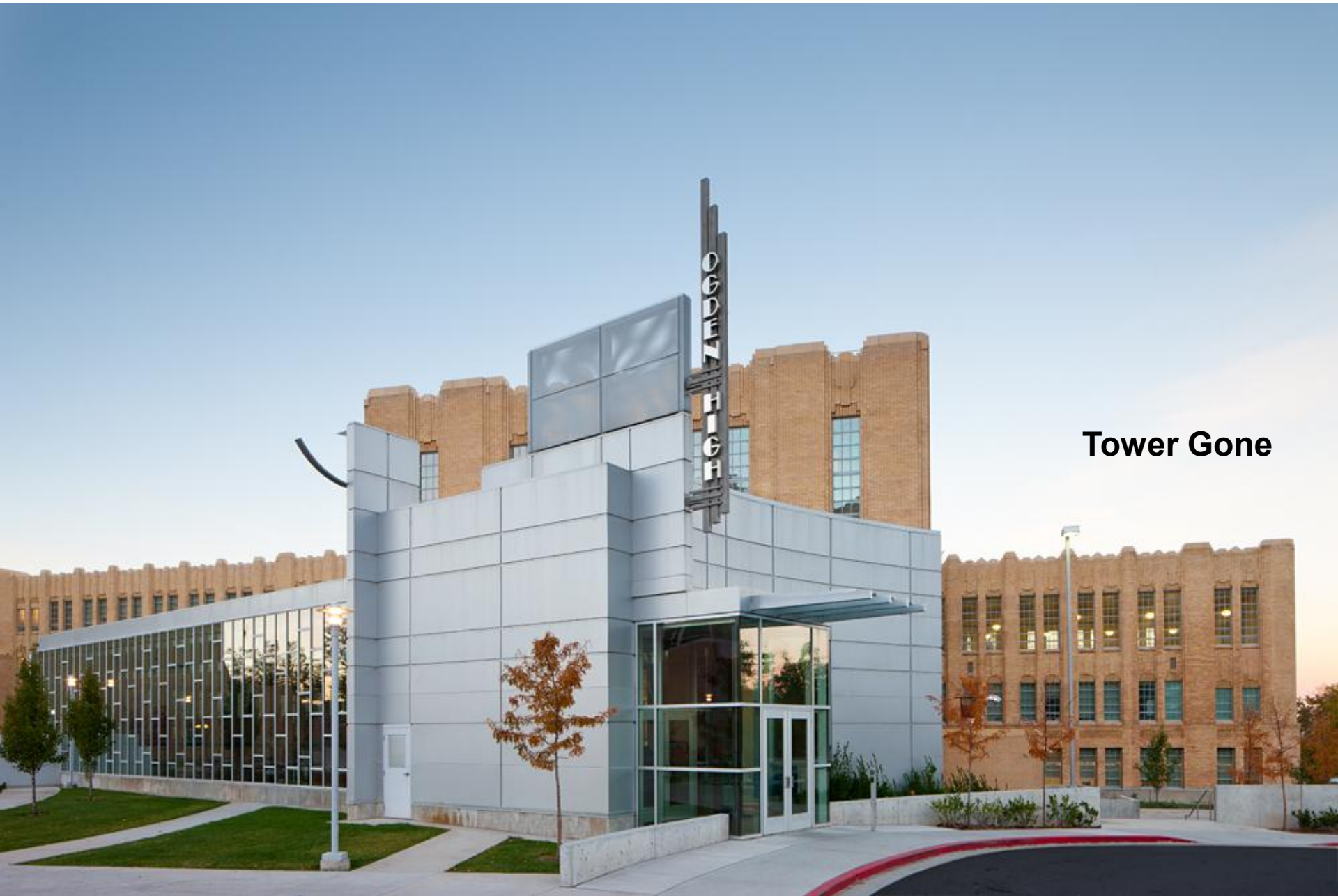
**Stair Tower
addition- settling
and leaning 3”**







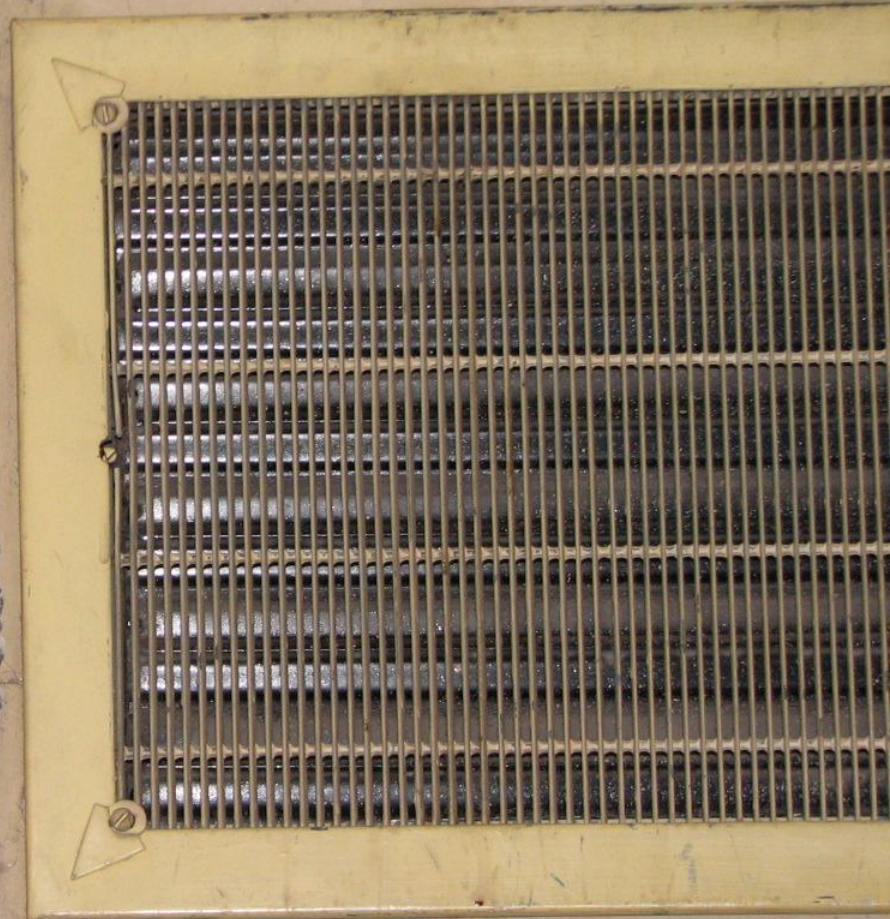




Tower Gone



























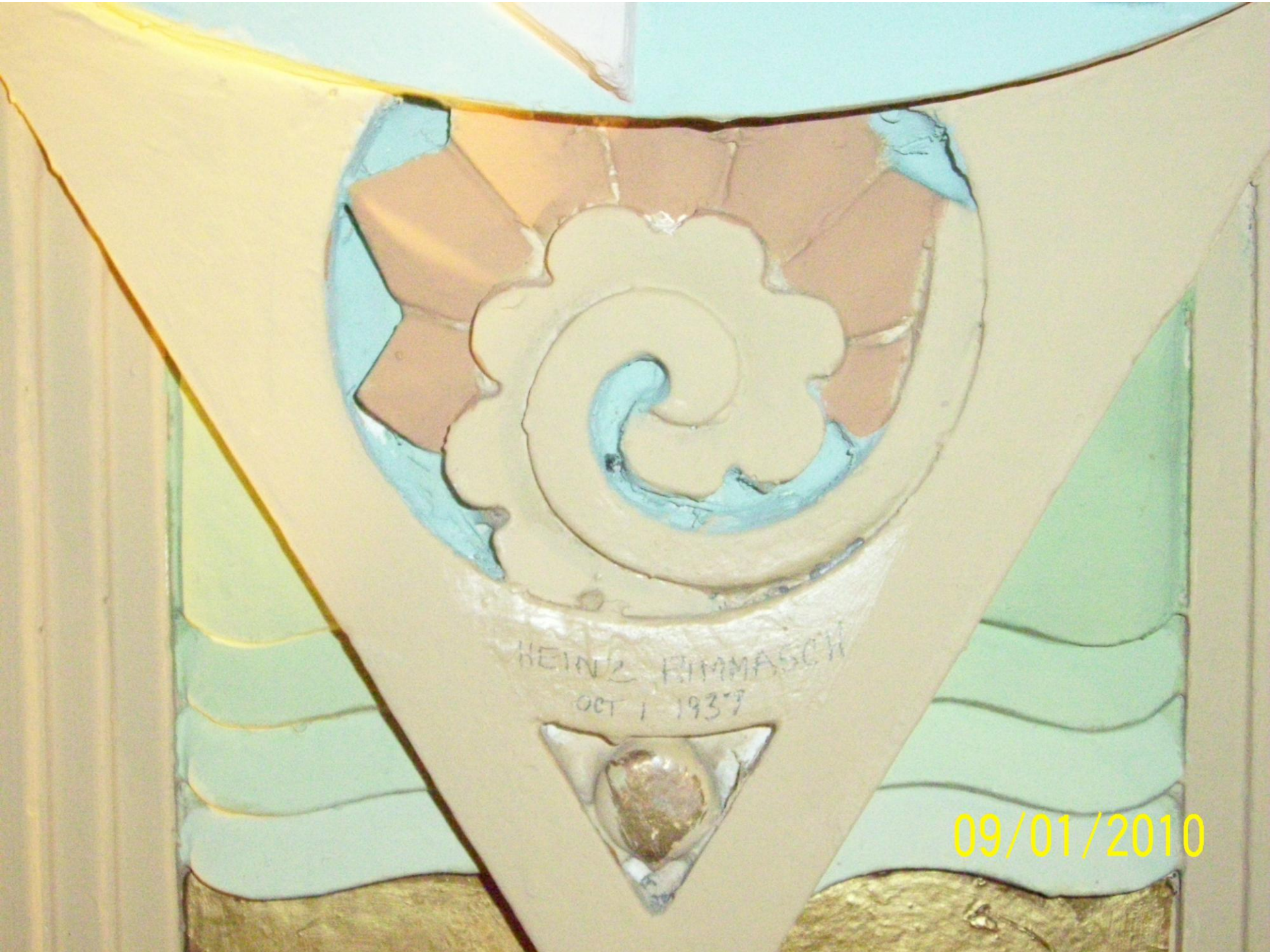












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Agenda for Auditorium Seating Mockup Review

Background

The existing chairs vary in width from 18"-21", with the majority of chairs at the 18" or 20" spacing. Today's standard sizes would average 2" larger.

The on center spacing of the rows varies between 29-7/8" and 31-3/4". Code minimum requires 12" clear between the back of the seat and the most forward point of the next seat. With the existing seats in the down position we have about 6-7" between the seat back and the front of the seat behind, and therefore do not meet code. Today's' typical layout should be closer to 36" spacing row to row.

The existing seating count is 1266 chairs on the main floor and 682 on the balcony for a total of 1948 seats.

Review the following models:

- restored chair mockup from Irwin Seating Company
- refurbished mockup of balcony chair from Burton Refinishing
- "before" sample of an old chair from the main floor
- "before" sample of an old chair from the balcony

General Project Approach to Seating

Main Level

Restore the seating to include which of the following options?:

1. new leather seats
2. new wood backs
3. new wood armrests
4. increase width of seat *
5. make repairs and powder coat end standards
6. make repairs and powder coat center standards and increase the spacing between rows to meet code **OR**
7. provide new center standards with self rising mechanisms

* In adjusting the width of the seats, if the two main aisles could be shifted outward by 14", the center section could stay at 14 seats, while the north and south sections would go to 12 seats each. This would result in a main floor reduction of 124 seats.

** Row spacing could be increased to 35" on center, which would eliminate 4 rows, for an additional reduction of 152 seats. This option would also require reworking the ventilation holes in the floor.



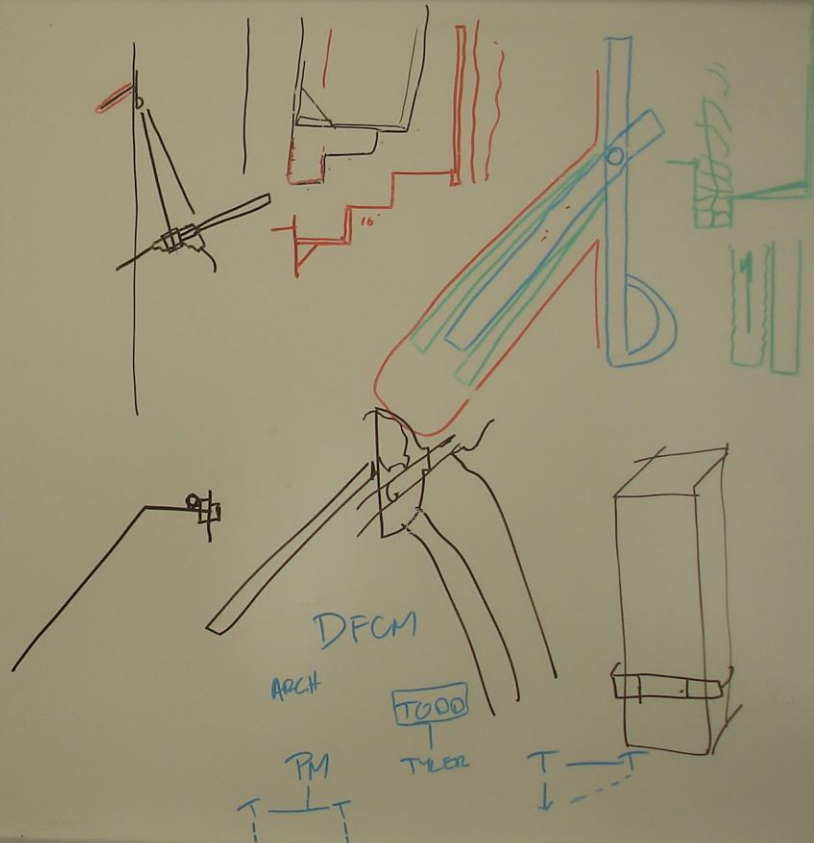






Beam Rider (Fall Protection device)
Loose Rope.

multi Drills











09/22/2009



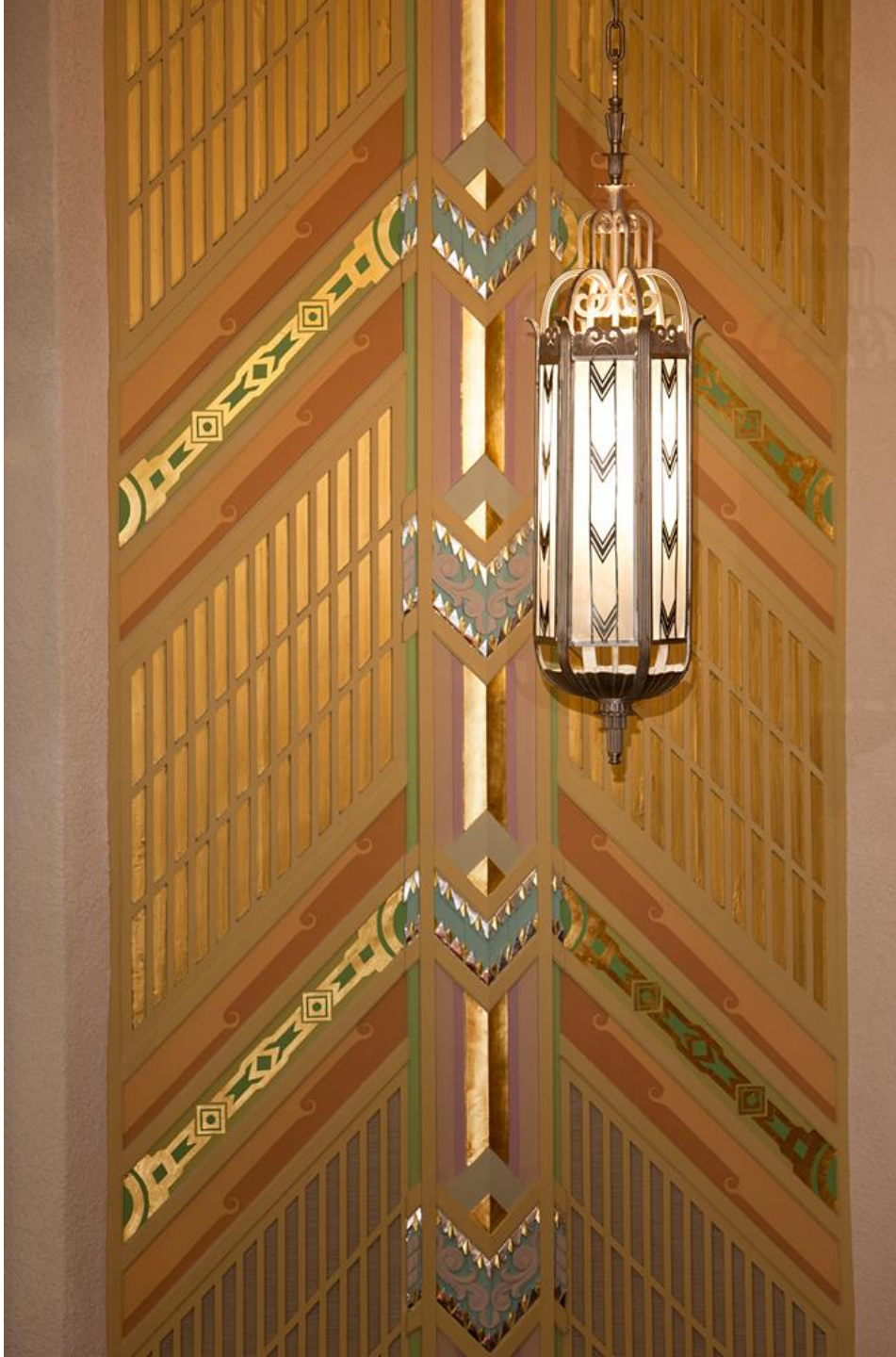
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